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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/585,675	05/19/2008	Jeffrey Burbank	T4342-14498US01	4700
181 7590 12/10/2010 MILES & STOCKBRIDGE PC 1751 PINNACLE DRIVE SUITE 500 MCLEAN, VA 22102-3833				
EXAMINER MENON, KRISHNAN S				
ART UNIT		PAPER NUMBER		
1777				
NOTIFICATION DATE		DELIVERY MODE		
12/10/2010		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ipdocketing@milestockbridge.com  
sstiles@milestockbridge.com

### Office Action Summary

**Application No.**

10/585,675

**Applicant(s)**

BURBANK, JEFFREY

**Examiner**

Krishnan S. Menon

**Art Unit**

1777

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 December 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 31-46 and 52-54 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 31-46 and 52-54 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

Claims 31-46 and 52-54 are pending as amended 12/01/10. Claims 31, 34, 37, 38, 41, 43, 45, 52 and 54 are independent.

#### **Claims Analysis**

All claims are directed to a water treatment plant/apparatus

Claim 52 appears to be the broadest, which recite a controller having a data carrier and a station on the controller adapted to receive filter modules, and the filter modules having data carrier with unique identifier, and the controller capable of reading and comparing the unique identifier with other such identifiers [in memory] to proceed or prevent operation.

Claim 54 adds a sensor to claim 52, and the corresponding functionality for the controller to store and use the break-through data of filter.

Regarding Claims 52 and 54, it is unclear whether applicant intended to positively recite the filter modules in these claims. For examination, these claims are assumed as reciting the filter modules.

Claim 43 recites the first and second deionization stage, replaceable filter with a resistivity sensor in between, and a controller programmed to indicate expiration of the deionization filter based on the reading of the sensor.

Claim 41 recited the first and second stage deionization filter with a resistivity monitor sensing water quality between the stages to shut down the pump when resistivity falls

below a certain point, and determine breakthrough, and continued filtration for a time after breakthrough.

Claim 34 recites a filter having two filter sections, a sensor between the two sections, and a controller, wherein the controller is configured to read a unique identifier in the filter and quality of water downstream of the first filter section using the sensor, and then continue operation based on the water quality reading, and in case of any indication of failure of the first section, to discontinue production after a predetermined quantity of water is produced.

Other additional elements in the claims include (1) when the first filter fails, production continues to a predetermined volume base on the life of the second filter; (2) filters are deionization filters, and sensor is a conductivity sensor (3) the controller configured to add a token to the filter indicating that it is used; (4) operation of the filter is using a pump; (5) intended use is for extracorporeal blood treatment; (6) first filter/filter stage include separate anion and cation exchange beds and second filter/stage is mixed bed.

The basic inventive idea appears to be providing two ion-selective filter stages with a sensor in between, so that when the first stage fails, the second stage provides the safety of providing enough water for the extracorporeal blood treatment device to complete the treatment process.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 31-46 and 52-54 are rejected under 35 USC 103(a) as being unpatentable over the combination of Astle et al (US 2003/0168389), Selby (US 4,246,101) and Carson et al (US 2006/0021944)**

**Astle** teaches a controller and a filter module, sensors to determine the filter quality or useful life, and the controller being configured to identify a unique identifier on the filter using bar code, electronic or magnetic signature, etc. The controller is also capable of communication with the data carrier on the filter for exchange of information, and capable of identifying the compatibility and the status of the filter. See abstract, figures and paragraphs 0038 - 0050.

Paragraphs 0047 – 0062 teach providing memory chips on the filter which can communicate with the control system to exchange information on useable life of the filter and predict end of life, etc. Astle system is capable of the operation described in the claims, such as reading a change in the status of the filter with a same unique identifier in a second reading triggering an operation to have a specified volume of liquid being produced before shut down (such as shut off a valve: Para 0058) to replace or regenerate the filter. This element of the claims is purely operational and would not add to patentability when the prior art device is so capable.

Astle does not explicitly teach a conductivity (or resistivity) sensor, even if it teaches regenerative type filters [0038]. Astle teaches an inline filter which runs on the

line pressure and does not have a pump. However, providing a pump for pumping the fluid through the filter would be obvious to one of ordinary skill in the art, and is not patentable.

Selby teaches a water treatment system in which, among others, an ultrafiltration unit followed by a nephelometer to measure the turbidity of output water, adsorbers followed by TOC monitor, and ion exchange beds followed by conductivity meter (see figures) to measure the TDS of water. Selby also teaches microporcessors and automated switching of the ion exchange beds for regeneration or shut down base on water quality output. Column 3, lines 50-57, column 4, lines 44-68; column 5, lines 38-68. The reference teaches individual and mixed beds – column 6, lines 14-20, column 8, lines 15-34; column 7, line 60 – column 8, line 11.

Selby teaches automatic recycle of water that does not meet quality and regeneration of the resin beds, adsorber beds, and the filters using appropriate water quality sensors/detectors. The monitoring and controls are by microprocessors. However, Selby does not appear to teach programming the controller based on the remaining life of the various filter units.

Selby also teaches automated regeneration including the location of the regenerate in the beds with monitors (see column 4, lines 10-17). Multiple beds are so sized as to require regeneration at the same time, which implies that they could also be individually monitored and regenerated – column 4, lines 18-30.

It would, therefore, be obvious to combine the teachings of Selby and Astle to complement each-other to have the capability of predicting the remaining life of the various filters, including the ion-selective filters. Such a combination would be capable of predicting the end of life of the ion selective filters to provide a predetermined quantity of water before the system shut-down. Particularly, the teaching of Astle in combination with Selby makes it possible to determine the remaining life of the filter system so that the quantity of water it can produce at any time is predictable.

Astle and Selby do not explicitly teach providing a redundant second stage ion selective filter that will take up the load for the predetermined volume of treated water after the first stage has reached the end of its life as is required in some of the claims.

Carston teaches in Fig 4 and paragraphs 0051 and 0052 redundant ion exchange beds wherein the upstream stage is sufficient to provide the water quality, but a second downstream redundant stage is provided to treat the water when the detector between them shows that the upstream stage is exhausted.

Therefore, it would be obvious to one of ordinary skill in the art at the time of the invention to have the teaching of Carson in the teaching of Astle and/or Selby to provide the redundant second stage filter to continue to produce the treated water of the required quality even if the first stage filter failed during operation.

### ***Response to Arguments***

Applicant's arguments filed 11/4/10 have been fully considered but they are not persuasive.

In response to the argument that the rejection does not address the individual elements of each independent claim separately. This argument is not persuasive because the structural elements claimed in the independent claims are only a filter module with some unique identifier capability, a pump, a sensor and a controller. All these structural elements are taught either individually or by the combination of the cited references. The elements specifically not taught by each of the reference is also pointed out (such as Astle not teaching the pump).

The functional language of the claims – the programming of the controller to enable certain operational steps are also taught by at least one of the references. For example, Astle teaches the control system as predicting end of life and remaining life of the filter, identifying the filters by unique identifier information, warning approaching end of life and shutting off the system when the filter reaches end of life. In fact the teaching of this reference is much more comprehensive than what applicant discloses and claims. The reference also teaches identifying previously used filters, as well as having permanently disabling features such as "fuses" to prevent re-use of spent filters. Paragraphs 0005,0006 and 0010-0017. Alternatives such as magnetic and bar code are also taught - see paragraphs 0054-0057.

The argument that Astle does not teach controlling a pump is also not persuasive. Controlling a pump instead of a valve is only routine to one of ordinary skill. See how a valve is controlled in paragraph 0058 and 0059.



The missing elements in this reference are taught by the other references, such as pump, conductivity sensor, etc. Use of a particular sensor to determine a sensed condition would be obvious given the principle of the programmed operation.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S. Menon whose telephone number is 571-272-1143. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on 571-272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Krishnan S Menon/  
Primary Examiner, Art Unit 1797